Mercury and Global Warming: Interactions, Solutions

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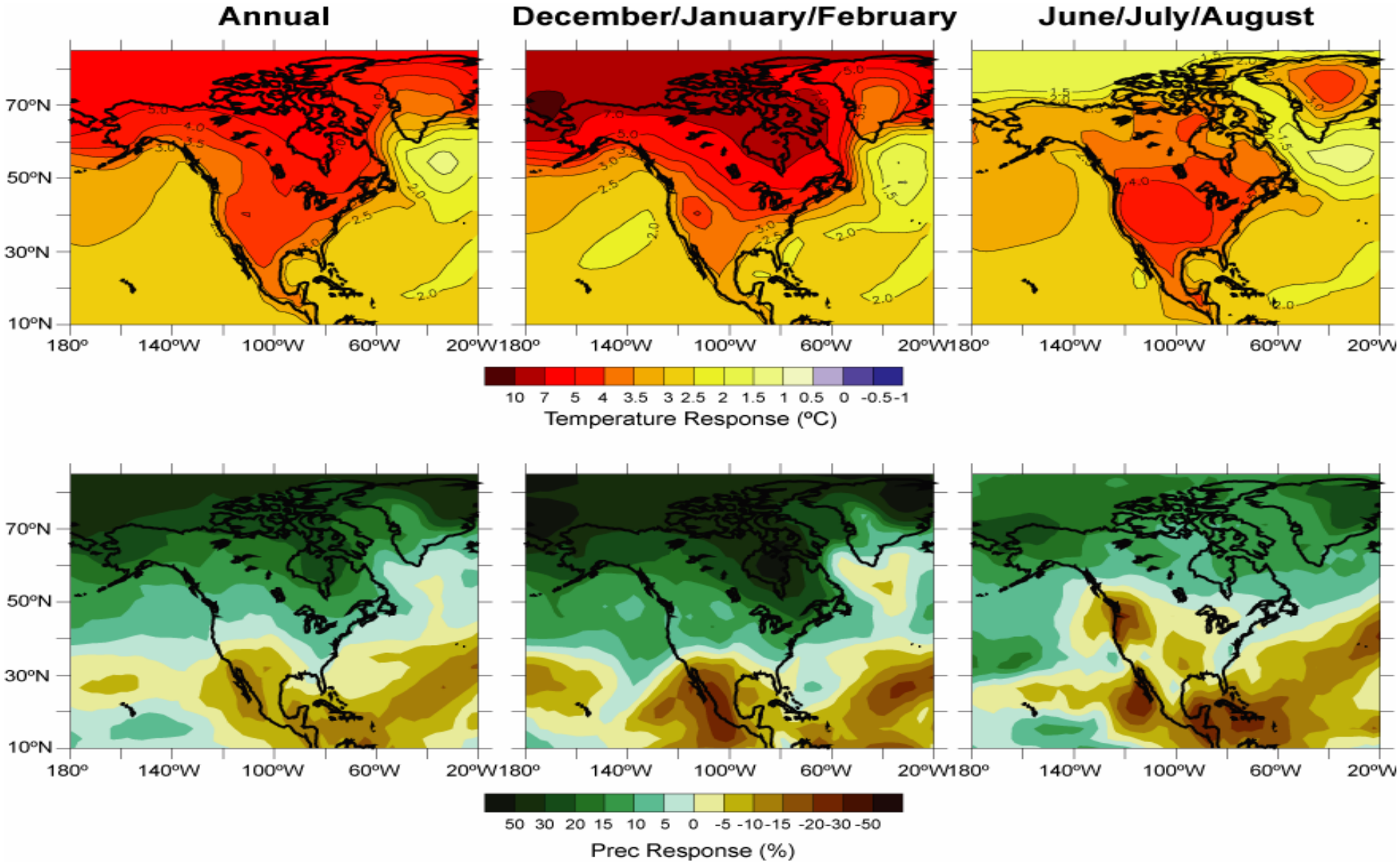
Global Warming Could Increase Environmental Mercury Releases

- Increased temperature→ increased mercury volatilization and release of mercury from permafrost
- Predicted global warming could increase fires in peat bogs and boreal forests, releasing mercury deposited over long periods (Turetsky, et al.,Geophysical Research Letters, 2006)

North American Projected Climate Change: Temperature and Precipitation in 2100



Global Warming Could Increase Mercury Methylation

- Methylation is temperature-dependent
- Increased temperature increases fish metabolism and methylmercury ingestion
- Estimated 1.7% increase in ocean methylmercury concentrations from a 0.4^{o}C increase in water temperature. Estimated 4.4% from 1.0^{o}C increase (Booth and Zeller, EHP, May 2005)

Solutions

- Strategies to reduce greenhouse gases can also reduce mercury
  - Energy efficiency
  - Green power
- Several USEPA voluntary programs have potential to address both GHG and Mercury

USEPA Programs

- Climate Leaders: Partners set greenhouse gas emissions reduction goals
- Combined Heat and Power Partnership: promotes CHP, or cogeneration, to increase efficiency of energy generation
- Green Power Partnership: partners commit to purchase green power or renewable energy certificates
- Responsible Appliance Disposal Program: utility and retailer partners follow best management practices for recycling of old refrigerators, freezers, air-conditioning units, and dehumidifiers, including recovery of refrigerant and mercury devices
- Energy Star: certification of energy-efficient appliances, lighting, buildings